Air Armament Center

U.S. AIR FORCE

Keynote Address
Precision Strike Association
Summer PEO Forum
27 Jul 2005

Maj Gen Robert
“Chedbob”
Chedister

Why Am I Here?

Give a Keynote Address Related to Precision Engagement Capabilities for the Future

What's the Desired Outcome?

Outline Some Issues

Be Interesting

Be Thought Provoking

The Plan

- USAF Air Armament Enterprise Overview
- Air Armament Historical Review
- Future Air Armament Opportunities
- Future Technology Opportunities
- Future Acquisition Opportunities

Disclaimer – This is ChedBob's Perspective

USAF Air Armament Enterprise Overview

AS YOU REQUESTED, HERE IS A SCHEDULE OF ALL FUTURE UNPLANNED NETWORK OUTAGES.
I TOOK THE INITIATIVE TO INCLUDE A SCHEDULE OF ALL FUTURE SICK DAYS, VOLCANIC ERUPTIONS, EARTH-QUAKES AND HURRICANES.
THIS IS THE POINT WHEN YOU REALIZE HOW STUPID YOUR REQUEST WAS AND WE HAVE A GOOD LAUGH.
DOES CNN KNOW ABOUT THIS?
S. Adams E-mail: SCOTTADAMS@AOL.COM
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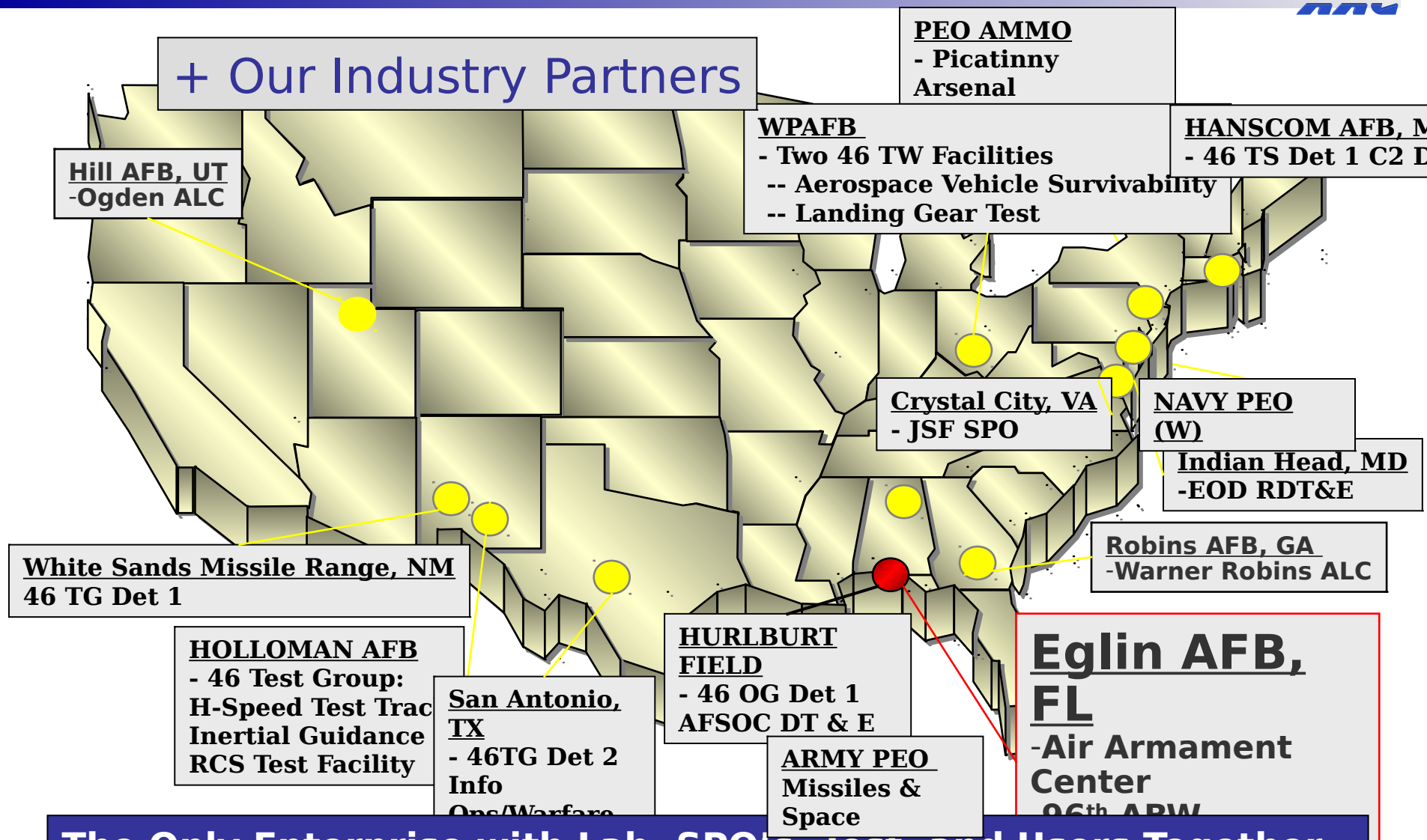
USAF Air Armament Enterprise



The Only Enterprise with Lab, SPO's, Test, and Users Together – A Great Combination

What We Do at AAC

From Concept to Employment

- **Science & Technology w/ AFRL, DTRA and Others: Develop the idea and produce a tech demonstration**
- **Product Support w/ Acquisition Organizations: Manage the Development of the weapons**
- **With 46TW, 53d W, AFOTEC and Sister Services Conduct Test & Evaluation to prove weapon readiness**
- **With ALC's and Sister Services Sustain and Demil the stockpile**
- **Run an AF base supporting Expeditionary Air Force**

Arming the Warriors

Transition Technologies to Weapon Systems and Provide War Winning Capabilities On Time, On Cost

We Have Been Well Recognized

JDAM

David Packard Excellence in Acquisition Award

SFW

DoD Value Engineering Award

Perry Award at the Precision Strike Conference
PAW

2003 John J. Welch Award

B-2 Shelter

Jacobs Master Builder Award

David Packard Excellence in Acquisition Award

WCMD

Outstanding AFMC Contracting Team Award

AMRAAM

Bernard J. Schriever Award

Outstanding AF System Program Director

Outstanding AF Program Manag

JASSM

David Packard Excellence in Acquisition Award

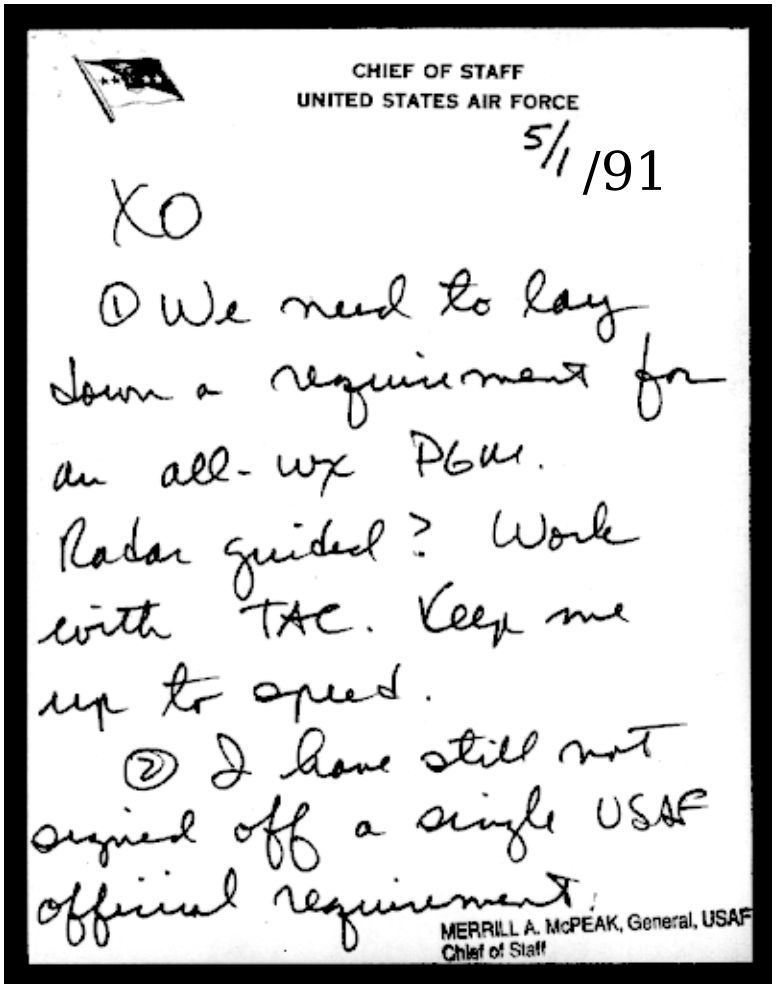
SDB

2004 John J. Welch Award

Air Armament Academy

1st Annual USD AT&L Workforce Development Award

Air Armament Historical Review



CHIEF OF STAFF
UNITED STATES AIR FORCE

5/1/91

XO

① We need to lay down a requirement for an all-wx PGM. Radar guided? Work with TAC. Keep me up to speed.

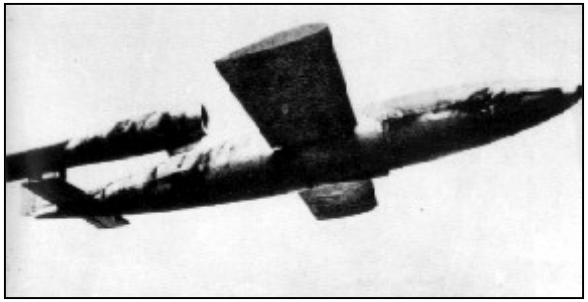
② I have still not signed off a single USAF official requirement.

MERRILL A. McPEAK, General, USAF
Chief of Staff

Air Armament – A Historical Perspective

1911- First Bomb dropped

1918 - Kettering Bug

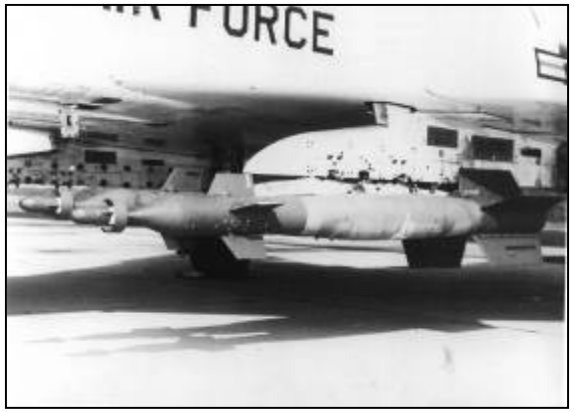


1928- German V-1

1943 - SD 1400 “Fritz X”

Air Armament – A Historical Perspective

1953 - AIM-9 “Sidewinder”



1968 - GBU-10 Laser Guided Bomb

1998 – B-2 Use of JDAM in Kosovo

Air Armament A Capability Transformation Success Story

Accuracy

1943

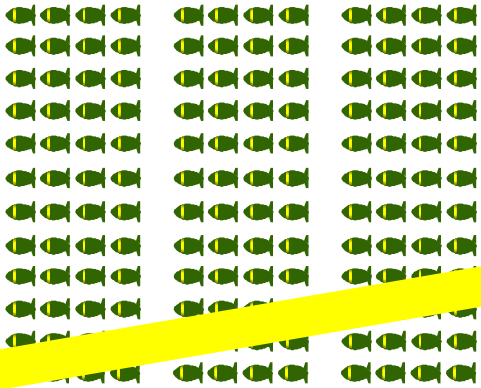
1500 B-17 sorties

9000 bombs (250#)

3300 ft CEP

One 60’ x 100’ target

W.W.II



1970

30 F-4 sorties

176 bombs (500#)

400 ft CEP

One Target

Vietnam

1991

1 F-117 sortie

2 bombs (2000#)

10 ft CEP

Two Targets per Sortie

Desert Storm

1999

1 B-2 sortie

16 bombs (2000#)

20 ft CEP

16 Targets per Pass

All Weather

Accuracy

Revolutionary Technologies

Laser Guidance

GPS Guidance

B-2 Drop of 80 JDAMs

Precisely Struck 80 Different Targets in One Pass

Air Armament In Review

AIM-9

AGM-65

M-117

MK-82

MK-83

MK-84

AGM-84

AGM-88
HARM

AIM-120

GBU-10,12

GBU-15

AGM-86C/D
CALCM

GBU-27

GBU-24

GBU-28

AGM-130

CBU-103
WCMD

CBU-105
WCMD

AGM-154
JSOW

GBU-31

GBU-37

AGM 88
SLAM

SLAM-ER

AGM-114
Hellfire

AIM-9X

CBU-107
WCMD

SDB

GBU-38

JASSM

JASSM (ER)

JDAM (ER)

WCMD
(ER)

DRAAM

WASAAMM

TDLS

TMMLW

Active
Denial

Lead Developer
XXX – USAF
XXX – USA
XXX – USN

Prior | 70s | 80s | 90s | 00s | Future

Future Air Armament Opportunities

THE GOVERNMENT SENT A GENERAL TO KILL ME FOR TALKING ABOUT MY ENCOUNTER WITH SPACE ALIENS.
I WAS SCARED AT FIRST. BUT WHEN YOU THINK ABOUT THE GOVERNMENT'S TRACK RECORD, WELL, MY ODDS ARE PRETTY GOOD...
ESPECIALLY AFTER ALL THE BUDGET CUTBACKS.
DANG IT! WHERE'S MY AIR SUPPORT?!!
S. Adams
10-8
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Future Air Armament Opportunities

- **Old/New Aircraft Integration with Old/New Weapons**
- **Universal Aircraft Interface**
- **Weapon Testing in Future**
- **Long Range Strike**
- **Networked Weapons**
- **Hitting Moving Targets in Weather**
- **Directed Energy as an Air Delivered Weapon**

Aircraft –Weapon Integration 1

	JDAM GBU-31	JDAM GBU-32/35	JDAM GBU-38	WCMD CBU-103/104 105 & 107	WDMC-ER	SFW CBU-97	JSOW AGM-154A
F-16C/D	Block 50 40 30	Block 50 40 30	Block 50 40 30	Block 50 40 30	Block 50 40 30	Block 50 40 30	Block 50 40 30
	● ● ●	○	● ● ●	● ● ●	◍	● ●	● ●
F-15C/D							
F-15E	●	○	●	◍		●	●
F-117A	◍			◍			
F/A-22A		◍	○				
A/OA-10A	◍		◍	◍		●	
B-1B	●		◍	●		●	●
B-2A	●		●			●	●
B-52H	●		○	◍			●
F-35A JSF	◍	◍	○	◍		○	◍
J-UCAS	◍	○	○				
Predator			◍				
F/A-18C/D	●	●	●				●
F/A-18E/F	●	◍	◍				●
F-14B	●		○				
F-14D	●		○				
AV-8B		●	◍				
P-3/S-3	○						

Funded = ◍

Unfunded = ○

Done = ●

Aircraft - Weapon Integration 2

	JASSM AGM-158	JASSM-ER	SDB-1 GBU-39	AMRAAM AIM-120 Phase 1/2	AMRAAM AIM 120 Phase 3	AMRAAM AIM-120 Phase 4	AIM-9X	MALD
F-16C/D	50 40 30	50 40 30	50 40 30	50 40 30	50 40 30	50 40 30	50 40 30	50 40 30
	● ◍ ○	○ ○ ○	○ ○ ○	● ● ●	◍ ◍ ◍	◍ ○ ○	◍ ◍ ◍	◍ ◍ ◍
F-15C/D				●	◍	◍	●	
F-15E	○	○	◍	●	◍	◍	○	
F-117A	○		○					
F/A-22A			◍	◍	◍	◍	○	
A/OA-10A			○					
B-1B	●	◍	○					
B-2A	●		○					
B-52H	●	○	○					◍
F-35A JSF	○		○	◍	◍	○	◍	
J-UCAS			○					
Predator			○					
F/A-18C/D	○			●	◍	◍	●	
F/A-18E/F	○			●	◍	◍	◍	
F-14B								
F-14D								
AV-8B								
P-3/S-3	○							

Funded = ◍

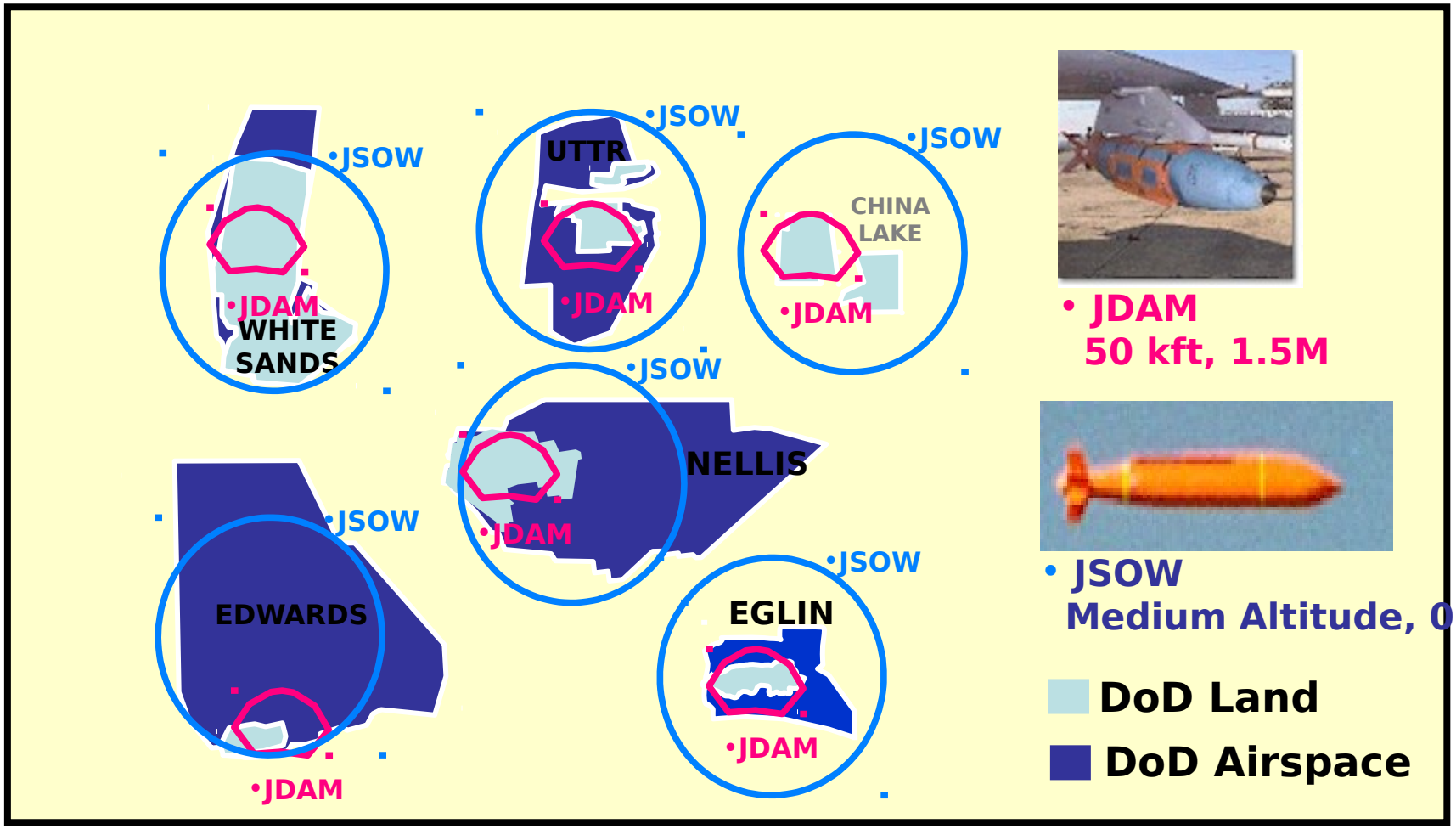
Unfunded = ○

Done = ●

Universal Armament Interface (UAI) Technical Approach

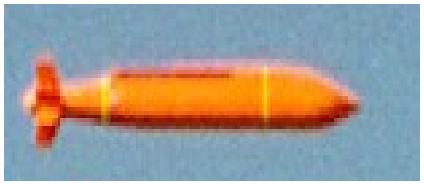
Program Objective: Decouple weapon integration schedules from aircraft OFP update cycle

Weapon Footprint Reality

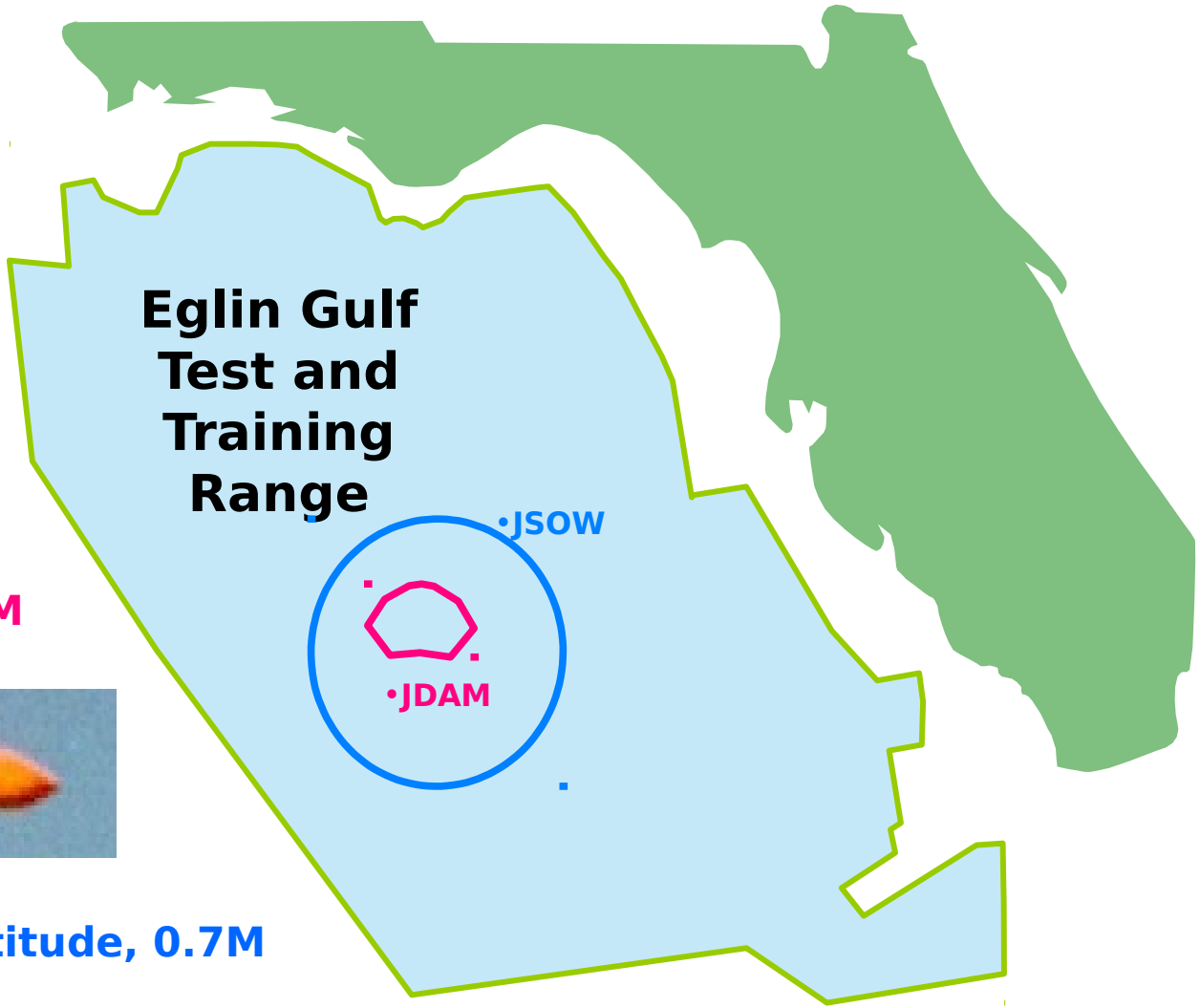


Weapon Footprint
"A Solution"

- JDAM
  50 kft, 1.5M

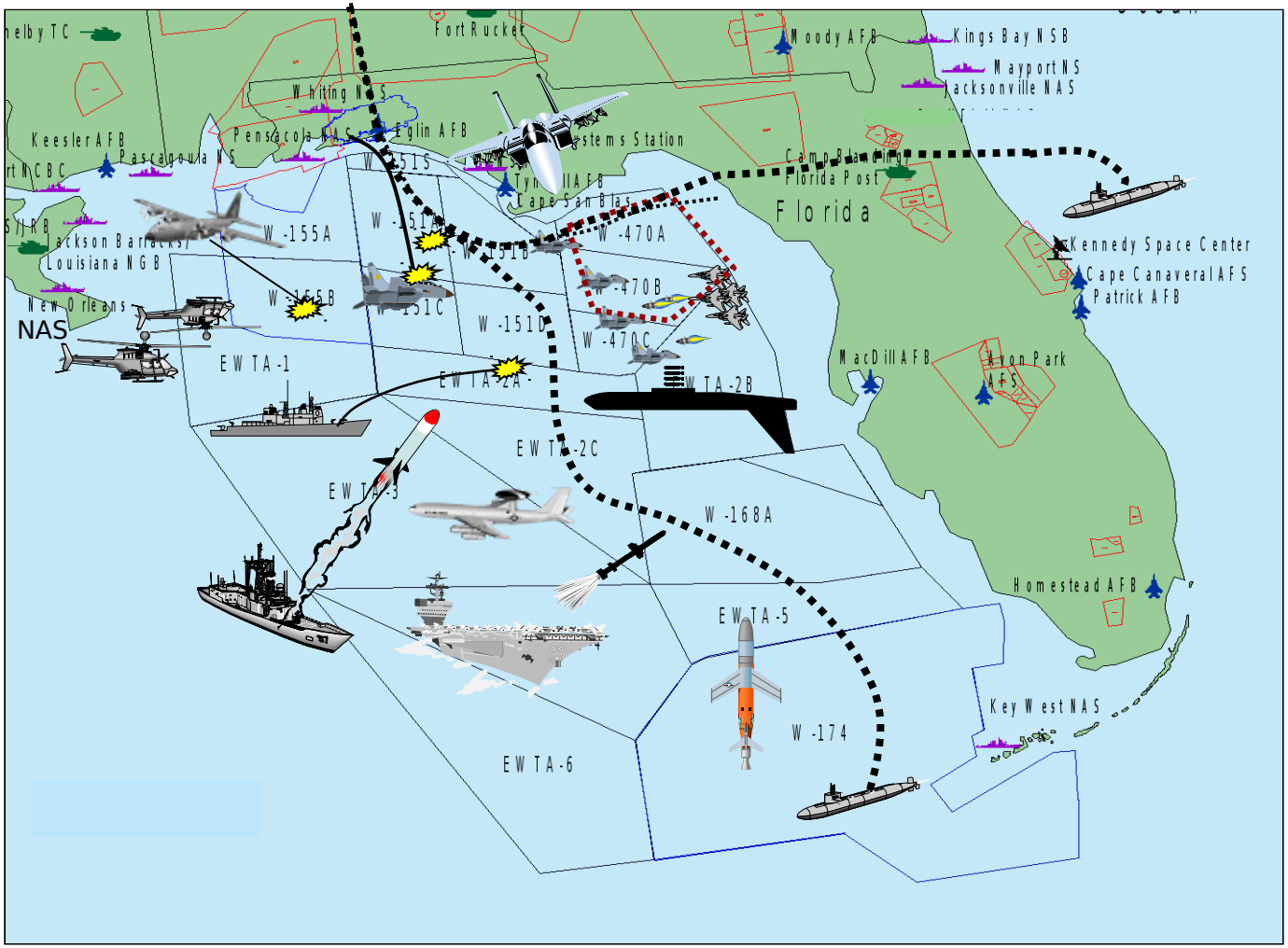


- JSOW
  Medium altitude, 0.7M



Gulf Range Complex

Weapons Testing in the Future



New Strike Weapons Challenges

Strike Long Range Targets Quickly

st way to meet requirement = Networked Weap

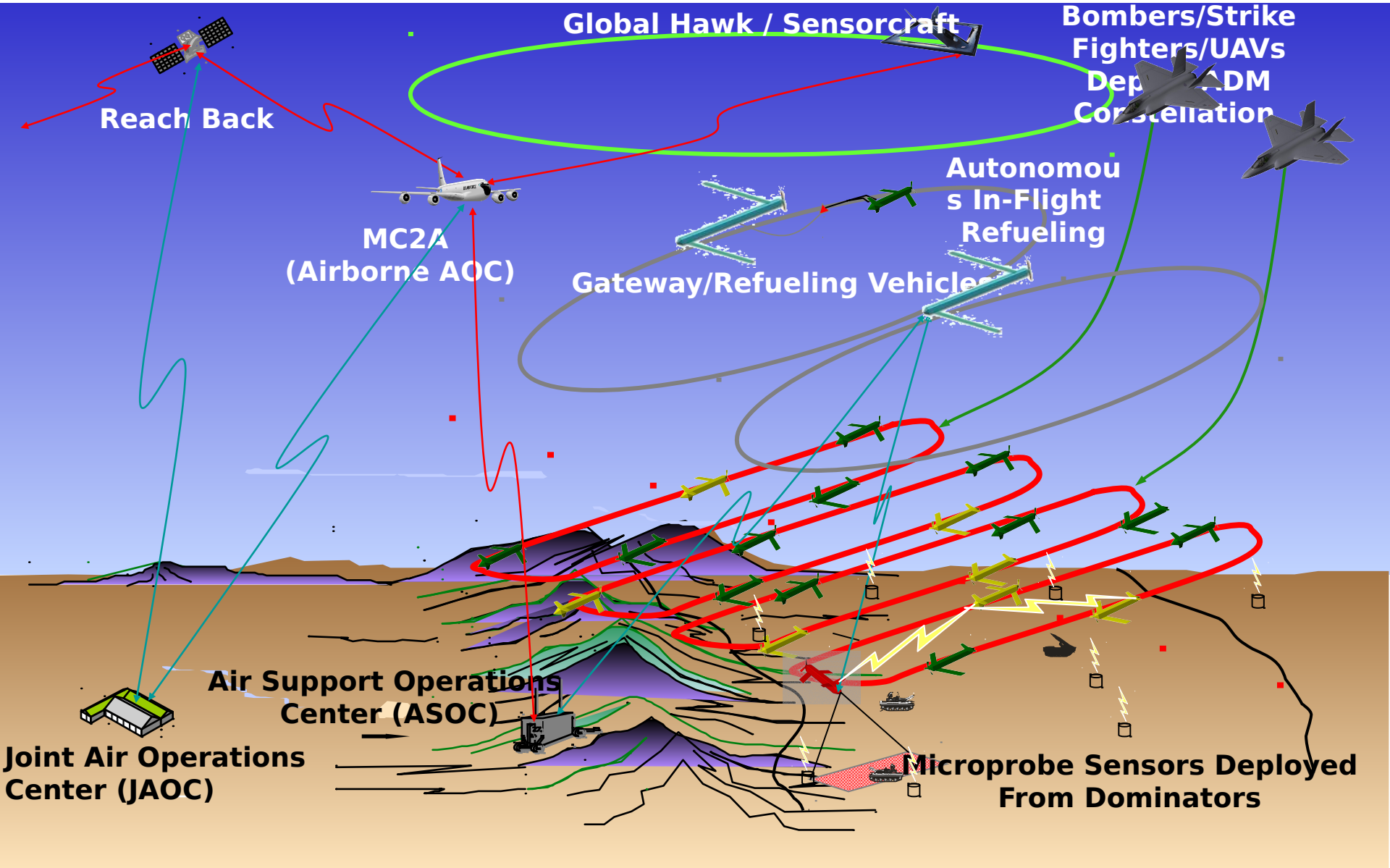
Joint Air-to-Surface Standoff Missile (JASSM / AGM-158)

- **Precision Guided Standoff Weapon For High Value Targets**
- **Range: Greater Than 200 NM**
- **Length: 14 Ft**
- **Weight: 2200 Lbs**

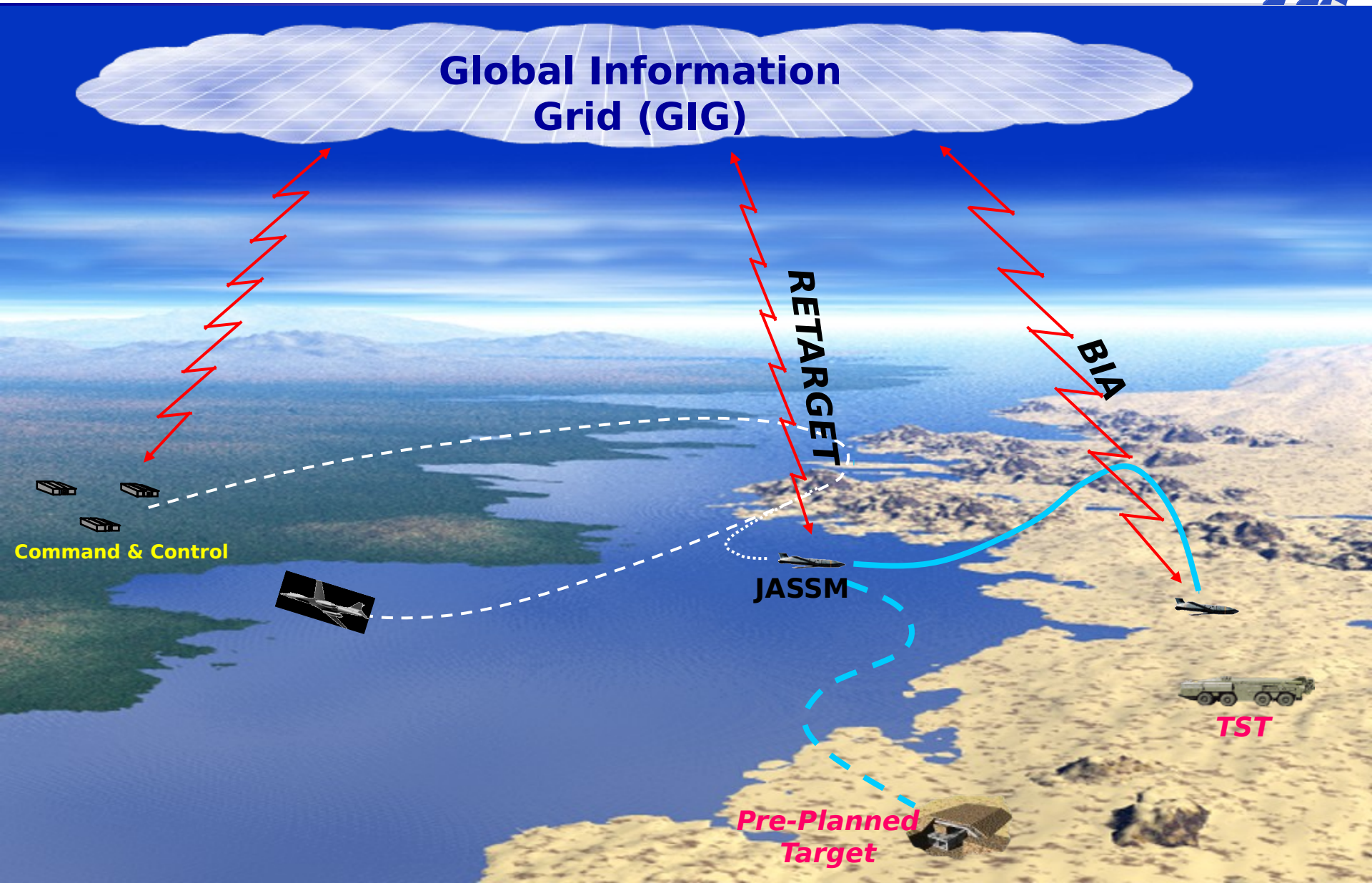
✓	**Technology**	**Mature and Proven**
✓	**Lethality**	**Proven**
✓	**Survivability**	**Proven**
✓	**Effectiveness**	**Proven**
✓	**Multi-Platform Integ**	**Tested on B-1, B-2, B-52, F-16**
✓	**Affordability**	**Achieved**
o	**Reliability**	**We're Working On It!**

Hardened Bunker Defeat
Hardened Target Performance
Demonstrated Accuracy
Navigation and Target Attack
High Jamming Performance
Soft Target Precision

Networked Weapons



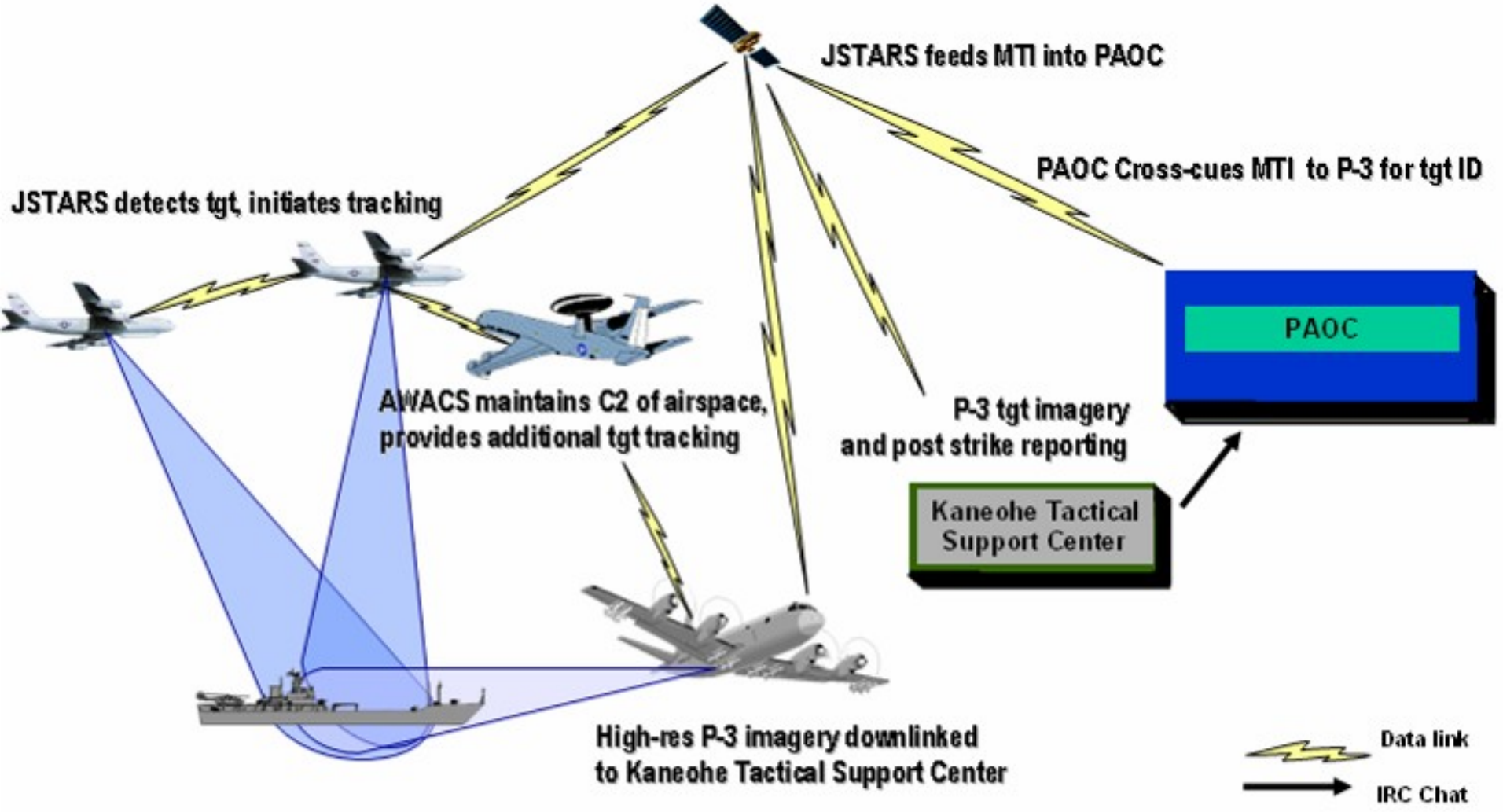
JASSM Data Link Concept
(Notional)



New Strike Weapons Challenges

Hit a moving target in weather

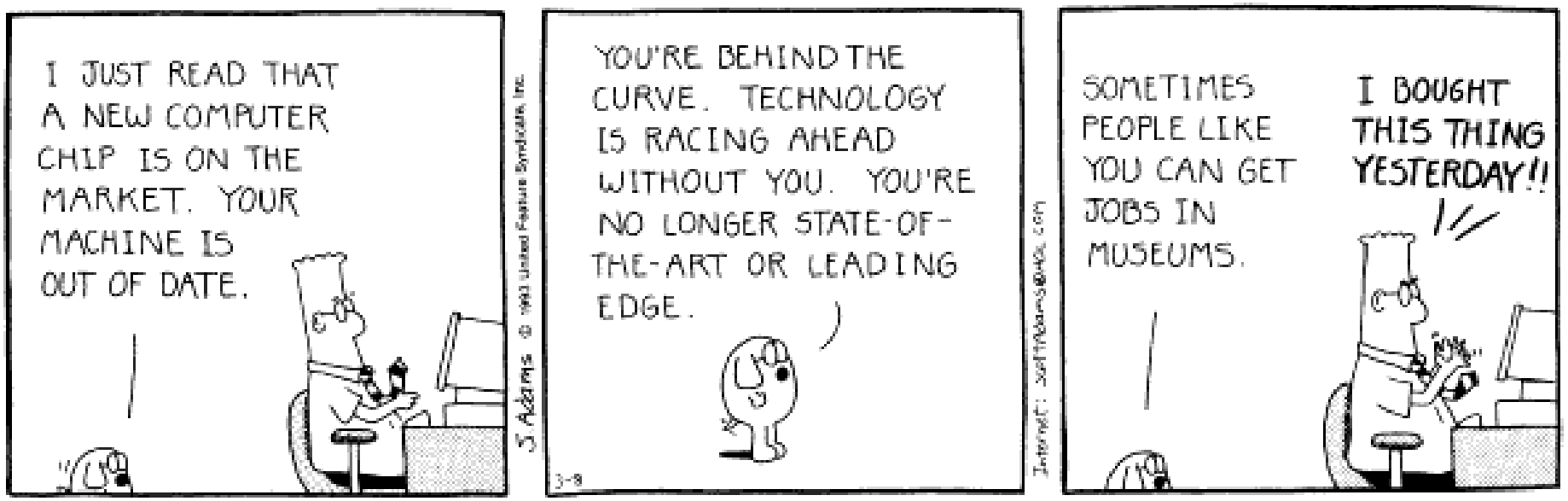
RESULTANT FURY (RF) Operational Concept



Directed Energy

- **Team Eglin is closely monitoring ongoing DE efforts:**
  - **AFSOC Advanced Tactical Laser ACTD**
  - **AFSOC Laser Gunship**
  - **AFRL's Laser Strike Fighter**
- **Preparing to meet test range needs for these advanced systems**
  - **46 TW/CV is AFMC designated DE Test Management Lead**
- **Program Update: DE Workshop a success!**

Future Technology Opportunities

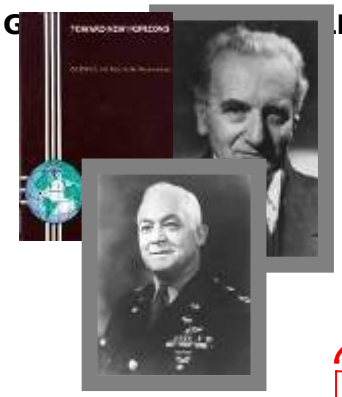

I JUST READ THAT A NEW COMPUTER CHIP IS ON THE MARKET. YOUR MACHINE IS OUT OF DATE.
YOU'RE BEHIND THE CURVE. TECHNOLOGY IS RACING AHEAD WITHOUT YOU. YOU'RE NO LONGER STATE-OF-THE-ART OR LEADING EDGE.
SOMETIMES PEOPLE LIKE YOU CAN GET JOBS IN MUSEUMS.
I BOUGHT THIS THING YESTERDAY!!

Toward the Next Horizon…

1947

"The first essential of airpower is pre-eminence in research."

G .D



1997

Mandated 35% Manpower Cut

4 Super Labs +

Today

One Lab
HQ + Sectors
9 Technology Directorates
AFOSR

Future

New Realities & Opportunities

- Changes in the AF
- Global Changes
- Customer Expectations
- Grow Future Workforce

oneAFRL

The means to achieve a new future…

Unfinished Business

- Horizontal Integration
- Project Management
- AFOSR integration
- Sectors
- Electronic kno

Other Issues

- Fractured tech leadership / development
- Multiple vs. corporate process
- Vertical stovepipes *too* strong
- Complex operating model
- Span of control / functional interfaces

$

The Journey Continues

Focused Long Term Challenges

- **Anticipatory Synchronized Operations**
- **Tailored persistent collection for Predictive BattleSpace Awareness**
- **Robustly collect and deliver effects for difficult targets in urban environments**
- **Globally maneuver to and through anti-access/area-denied environments to deliver effects rapidly and/or persistently**
- **Remotely direct sense and render ineffective CBRNE Targets**
- **Complete all missions with impunity in a high threat aerospace environment.**
- **Covertly deliver integrated suite of cyber effects to influence adversary activity**
- **Integrated Information Defense System**
- **Tactical space access and operations**

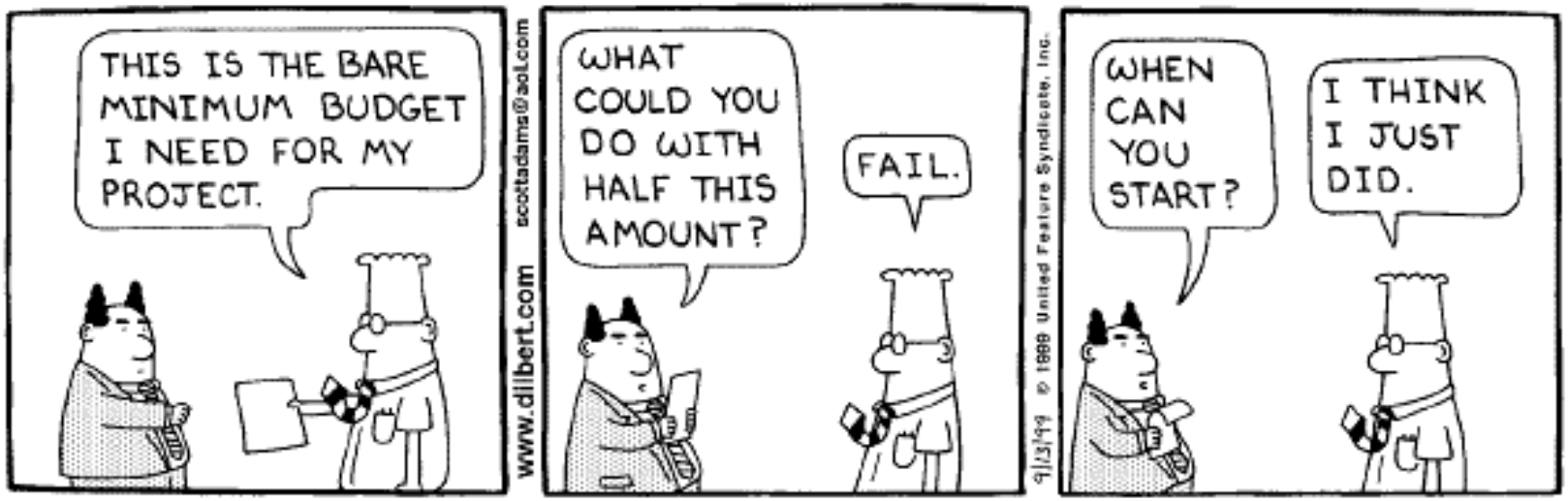
If ChedBob Were King of Weapons Technology Development & Insertion

- **All Platforms & Weapons Would Require UAI**
- **All Future Precision Weapons Would Be Net Capable**
- **We Would Be Working On An ACTD For A Suite Of Miniature Munitions For UAV's**
- **All Weapons Test Instrumentation Would Be Strap On, Miniaturized and Interoperable With All Ranges,**
- **We Would Be Busy Working On A DE Weapon ACTD – Now**
- **All Future Fuzes Would Be Electronic Vice Electro-mechanical**
- **Weapons S&T Funding Would Equal Other Sectors.**

Future Acquisition Opportunities

"It's Tough To Transform Without Changing"

- Gen Speedy Martin April 3, 2004


THIS IS THE BARE MINIMUM BUDGET I NEED FOR MY PROJECT.
WHAT COULD YOU DO WITH HALF THIS AMOUNT?
FAIL.
WHEN CAN YOU START?
I THINK I JUST DID.
www.dilbert.com scottadams@aol.com
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… Not Just the Air Force

- **Joint Operations**

Joint Requirements

Joint Acquisitions

"We are focused always on programs, always on platforms. We are going to change that… Not only with ourselves but how we… join with the other Services, with coalition partners."

-- General John Jumper, Chief of Staff of the

Acquisition – A Study In Paradox

- **It Is All About Relationships, Yet Is Driven By Cold Hard Data.**
- **It Is Gut-deep Patriotism, Yet It Is Driven By Politics And The Stock Market.**
- **It Is Based On Rules Codified In Voluminous Laws, Regulations, And Policy Directives, Yet The Rules Change Constantly And Are Subject To Vastly Different Interpretations.**

Acquisition - A Labyrinth

Acquisition Team

Industry

Requirements
Services
OSD
Joint Staff
Combatant Commanders
Congress

Workforce
Personnel Systems
Civilian
Military
Support Contractors

Planning Programming & Budgeting Systems (Services, OSD, Congress, Industry)

Political Structure

Arms Linked vs. Length

We are more likely to get

<u>What</u> the warfighter needs

- *Capability Development Document (CDD)*

<u>When</u> they need it

- *Required Assets Available (RAA)*

At a <u>price</u> we can afford

- *Unit price within CDD threshold and program budget*

If we team with Industry

Business Practices That Have Worked For AAC

- **Integrated Functional Expertise**
- **Simplified Source Selection Procedures**
- **Clear Specification Accountability and Control**
- **Codified Long Term Agreements**
- **Design Life Warranties**
- **Integrated Development, Production And Sustainment**
- **Incremental Growth In Product Performance**

If ChedBob Were The King Of Acquisition

- **All Weapons Programs Would Be Joint**
- **Fewer Programs – Adequately Manned And Funded**
- **All Programs Would Require a Competitive CAD Phase**
- **HHQ Would Set Policy But Stay Out Of Execution After No Milestone B**

Closing

- **Carpe Diem**
- **Get a Message to Garcia**
- **Three Questions**